CLAIMS:

1. A motor comprising:

a stator having a plurality of magnetic poles, wherein the number of the magnetic poles is represented by 2x (x is an integer number greater than or equal to one), and wherein the magnetic poles are arranged along the circumferential direction of the stator;

a rotor facing the magnetic poles, wherein the rotor includes:

an armature core having a plurality of teeth, wherein the number of the teeth is represented by 2y (y is an integer number greater than or equal to three), and wherein a coil is wound about each tooth;

a commutator having a plurality of segments, wherein the number of the segments is represented by 2xy, and wherein the segments are arranged along the circumferential direction of the commutator; and

a plurality of short-circuit members, wherein each short-circuit member is connected to a predetermined number of the segments, wherein the number of the segments that are connected to one short-circuit member is B, and wherein the number of the short-circuit members is at least 2xy/B; and

an anode supply brush and a cathode supply brush, wherein the supply brushes slide against the commutator, and wherein the supply brushes are arranged at a predetermined angular interval about the axis of the commutator,

wherein each short-circuit member extends in an arcuate form in an angular range corresponding to the arranging positions of the segments to be connected to the short-circuit member, and wherein the short-circuit members are laminated to form a multi-layer structure in the axial direction of the commutator, and form a

substantially cylindrical laminated body, and

wherein the short-circuit members are formed and arranged such that at least parts of two or more of the short-circuit members are in the same layer of the laminated body so that the number of layers of the laminated body is less than the number of short-circuit members.

2. The motor according to claim 1, wherein some of the short-circuit members are arranged across several layers of the laminated body.

3. The motor according to claim 2, wherein each of the short-circuit members that are arranged across several layers of the laminated body has a first portion and a second portion, wherein the first portion and the second portion are arranged in adjacent layers, and wherein each short-circuit member is bent between the first portion and the second portion such that the first portion and the second portion are offset in the axial direction of the laminated body.

4. The motor according to claim 1, wherein, when the number of the short-circuit members is represented by A, the angular width of each short-circuit member is less than or equal to 360° - 360°/A.

5. The motor according to claim 1, wherein the number of magnetic poles is six, the number of teeth is eight, and the number of the segments is twenty-four, and wherein each short-circuit member connects a set of three segments to each other.

6. The motor according to claim 5, wherein the number of short-circuit member is eight, and wherein the

angular width of each short-circuit member is less than or equal to 315 degrees.

7. The motor according to claim 6, wherein the angular width of each short-circuit member is 240 or 120 degrees.

8. The motor according to claim 5, wherein each set of three segments that are connected to one of the short-circuit members are arranged at angular intervals of 120 degrees.

9. The motor according to claim 5, wherein each set of three segments that are connected to one of the short-circuit members include a middle segment and side segments, the side segments being arranged on both sides of the middle segment, and wherein the side segments are each connected to one of the coils.

10. The motor according to claim 1, wherein the supply brushes are arranged at angular interval of 60, 180, or 300 degrees about the axis of the commutator.

11. A motor comprising:

a stator having six magnetic poles, wherein the magnetic poles are arranged along one circumferential direction of the stator, and wherein the magnetic poles are arranged such that the magnetic poles that are adjacent to each other in the circumferential direction have different polarities;

a rotor facing the magnetic poles, wherein the rotor includes:

an armature core having eight teeth, wherein a coil is wound about each tooth;

a commutator having twenty-four segments,

wherein the segments are arranged in the circumferential direction of the commutator; and

a plurality of short-circuit members, wherein each short-circuit member is connected to three of the segments; and

an anode supply brush and a cathode supply brush, wherein the supply brushes slide against the commutator, and wherein the supply brushes are arranged at an angular interval of 180 degrees about the axis of the commutator,

wherein the segments are classified into first to eighth segment groups in order along the one circumferential direction of the commutator, wherein each segment group includes first to third segments, and wherein each coil is connected to the second and third segments of one of the segment groups,

wherein the short-circuit members include first short-circuit members and second short-circuit members, wherein each of the first short-circuit members is connected to the first segment of an odd number segment group, the third segment of an even number segment group that is adjacent to the odd number segment group in the one circumferential direction, and the third segment of an odd number segment group that is adjacent to the even number segment group in the one circumferential direction, and

wherein each of the second short-circuit members is connected to the first segment of an even number segment group, the second segment of an odd number segment group that is adjacent to the even number segment group in the one circumferential direction, and the second segment of an even number segment group that is adjacent to the odd number segment group in the one circumferential direction.

12. The motor according to claim 11, wherein each of the short-circuit members extends in an arcuate form in

an angular range corresponding to the arranging positions of three segments to be connected to the short-circuit member, wherein the short-circuit members are laminated to form a multi-layer structure in the axial direction of the commutator, and wherein the short-circuit members form a substantially cylindrical laminated body.

13. The motor according to claim 12, wherein the short-circuit members are formed and arranged such that the number of layers of the laminated body is less than the number of the short-circuit members.

14. The motor according to claim 12, wherein two short-circuit members that do not overlap each other in the axial direction are arranged in the same layer of the laminated body.

15. The motor according to claim 12, wherein a space exists between adjacent short-circuit members in the same layer of the laminated body, and wherein some of the short-circuit members are bent such that parts of the short-circuit members in different layer is arranged in the space.

16. The motor according to claim 12, wherein some of the short-circuit members are bent to be arranged across several layers of the laminated body.

17. The motor according to claim 16, wherein the short-circuit member connected to the first segment of the second segment group and the short-circuit member connected to the first segment of the third segment group are bent between the third segment of the third segment group and the first segment of the fourth segment group, and

wherein the short-circuit member connected to the first segment of the sixth segment group and the short-circuit member connected to the first segment of the seventh segment group are bent between the third segment of the seventh segment group and the first segment of the eighth segment group.